2008 Louisiana Asthma Surveillance Report

ASTHMA Management and Prevention Program

LOUISIANA Department of HEALTH and HOSPITALS

Bobby Jindal
GOVERNOR

Alan Levine
SECRETARY

State of Louisiana

Department of Health and Hospitals
Bureau of Primary Care and Rural Health

December 1, 2008

Dear Asthma Stakeholders,

Asthma is a serious chronic disease that impacts our lives frequently in Louisiana. Asthma has even been known to cause an enormous impact in many Louisiana families due to the health effects and loss of life associated with asthma.

Asthma symptoms, which include coughing, wheezing, and chest tightness, are common during an asthma attack. Asthma in children is on the rise and is the leading cause of missed days of school nationally, as well as, in the state of Louisiana. Louisiana is working to decrease the burden of asthma with proper treatment of symptoms and education emphasizing self-management.

The Louisiana Department of Health and Hospitals Bureau of Primary Care and Rural Health is pleased to release the 2007 Louisiana Burden of Asthma Report that provides Louisianans citizens, asthma stakeholders, and Legislators with information regarding asthma prevalence, mortality, the burden of asthma on the patients and caregivers, severity of the disease, and the State cost associated with treating asthmatics.

The Louisiana Asthma Management and Prevention Program and the Louisiana Asthma Surveillance Collaborative will continue to work together to implement evidence based strategies to reduce the burden and improve the quality of life of Louisianans living with asthma.

Sincerely,

Matthew T. Valliere

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Director Chronic Disease Prevention and Control Unit

Sincerely,

Mark Anthony Perry

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Acting Asthma Program Manager

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Louisiana Department of Health and Hospitals

The Burden of Asthma in Louisiana

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Louisiana Asthma Surveillance Report 2008
March 2010

The Burden of Asthma in Louisiana
2008 Asthma Surveillance Summary Report

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Acknowledgements

The Louisiana Bureau of Primary Care and Rural Health Chronic Disease Prevention and Control Unit would like to express our acknowledgement to the committed partners of the Louisiana Asthma Management and Prevention Program. Louisiana is dedicated to improving the health of asthmatics statewide and will continue to provide data driven strategies to combat asthma on the state's communities.

The Louisiana Management Program would like to take this time to acknowledge its partners that play a vital role in collecting, analyzing and disseminating asthma burden data.

- Louisiana Behavioral Risk Factor Surveillance System
- Louisiana Asthma Surveillance Collaborative
- Louisiana Department of Education
- Louisiana Department of Environmental Quality
- Louisiana Office of Public Health Section of Environmental Epidemiology and Toxicology
- Louisiana Tobacco Control Program
- Louisiana Office of Medicaid
- University of Louisiana Monroe School of Pharmacy

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Centers of Disease Control and Prevention
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Visit the Louisiana Asthma Management and Prevention Program Website to learn more about how to improve your health related to asthma at http://www.asthma.dhh.louisiana.gov

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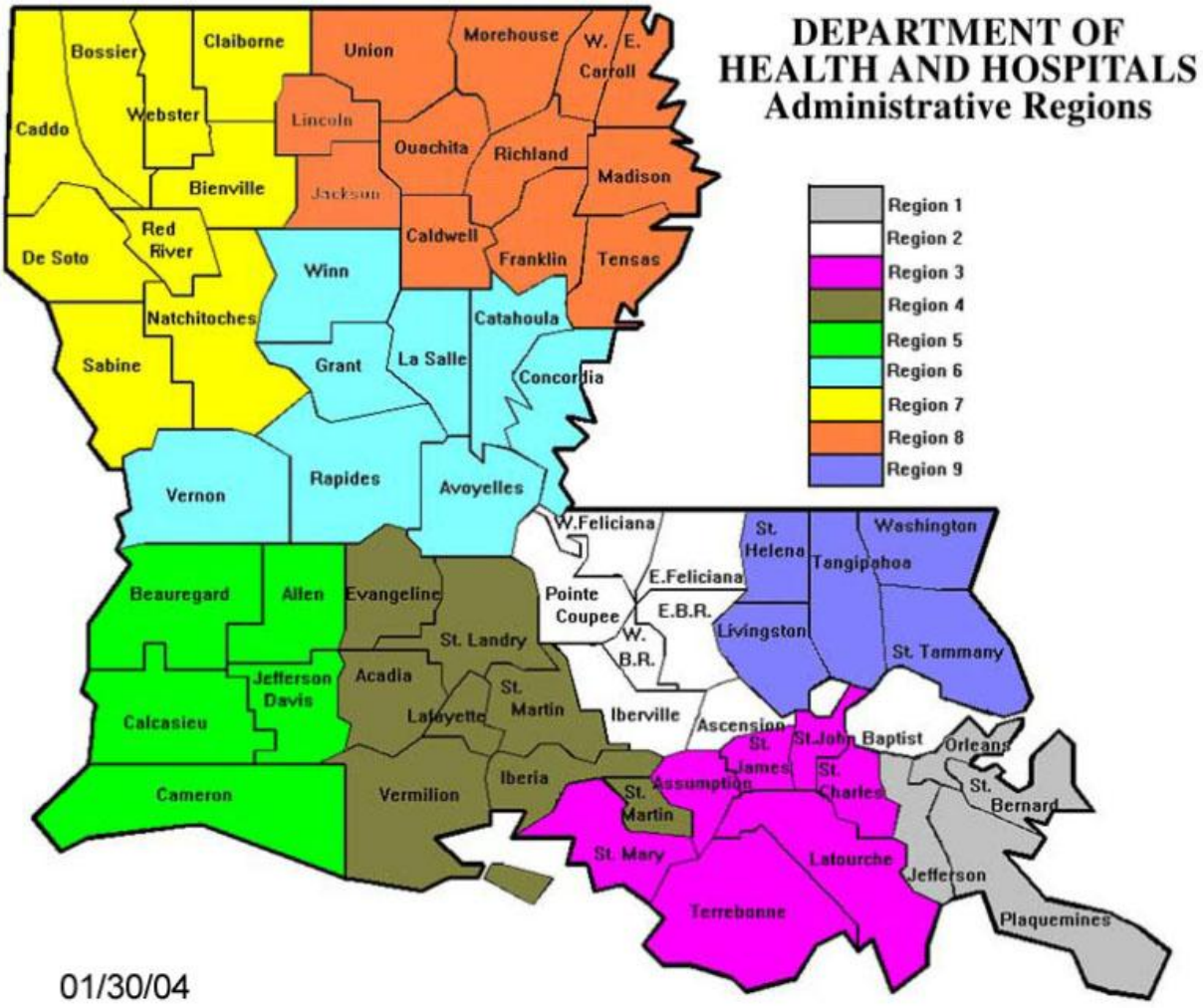

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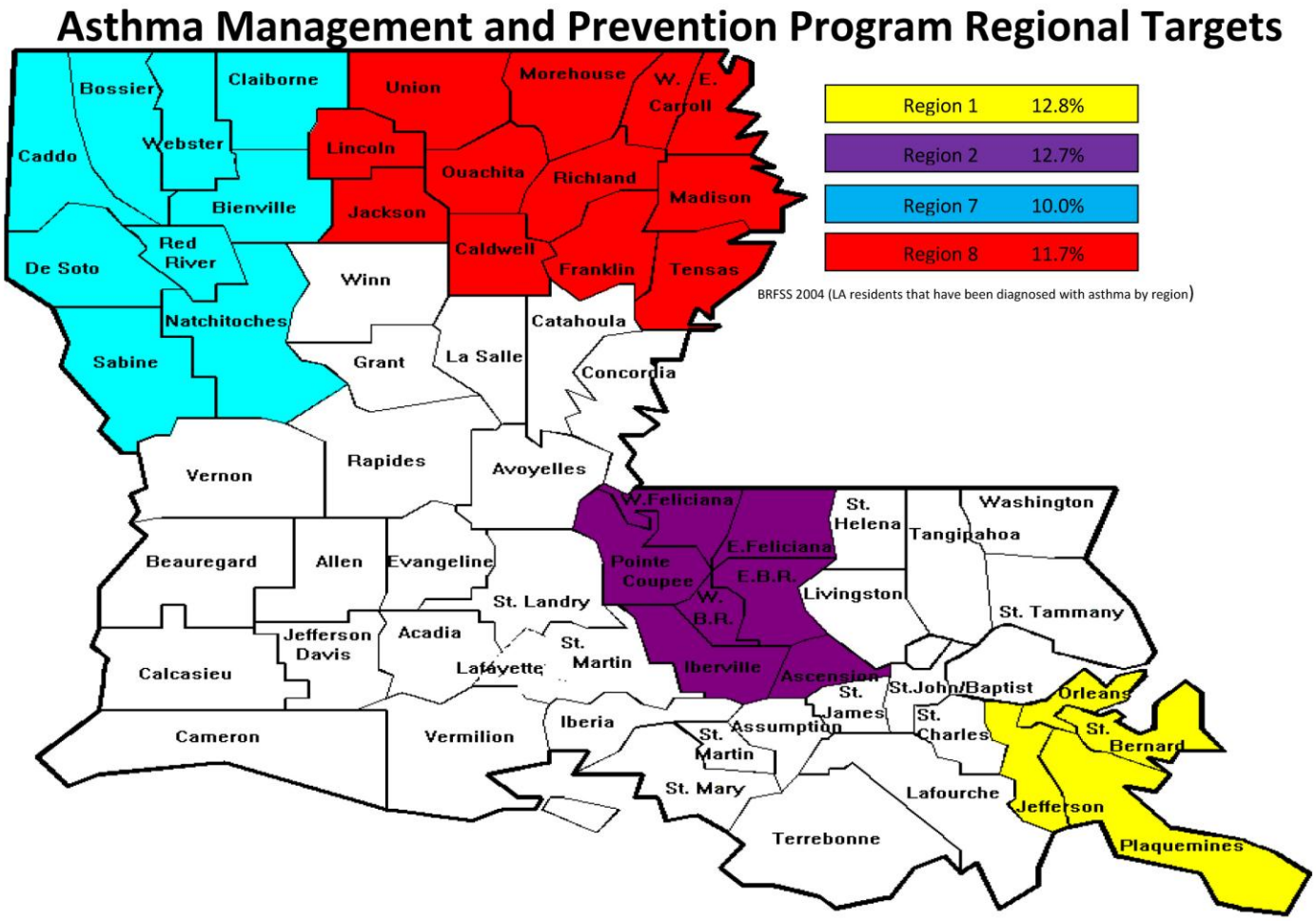


Introduction

Asthma is a chronic inflammatory disorder of the lungs. Asthma is a disease of the lungs, specifically of the airways, which become narrowed, inflamed, and choked with mucus. These airway changes cause the breathing problems that occur in people with asthma. Asthma attacks are usually caused by tobacco smoke, cold air, inhaled allergens, medications, food and food additives, exercise, respiratory viral infections, weather (i.e. cold air), strong emotions, some alcoholic beverages, and irritants within the environment. Asthma is one of the leading chronic conditions that cause restricted activity and the second highest chronic illness that effect children. Nationally, asthma related incidents account for 10.1 million missed days of school and is the third-ranking cause of hospitalization among those younger than 15 years of age. Within the US population, the impacts of asthma for economic, health and social burdens vary. Medical costs for hospitalization, Emergency Department (ED) visits and outpatient care for asthma related incidents have a tremendous impact on the economy. [1, 6]

The 2008 Louisiana Asthma Burden Report will describe the health indicators for asthma management and prevalence among the population within the State of Louisiana. The Louisiana Asthma Management and Prevention Program (LAMP) continues to establish and strengthen its surveillance program. Public health surveillance is defined as an "on-going systematic collection, analysis and interpretation and dissemination of health data essential to planning, implementation and evaluation of public health practice" [2]. The purpose of this report is to describe the data that is collected by LAMP through its surveillance network, identify high burden asthma populations and share findings with stakeholders and partners and further identify data gaps that will enable better understanding of the asthma burden in Louisiana.

The burden of asthma reflects the number of days missed at school or work; physical activity limitation; sleep deprivation; the frequency of emergency room visits and urgent care for worsening conditions. The Louisiana Office of Vital Statistics provides an annual mortality data file that is used to calculate the asthma mortality rates. This report will also describe the impact of asthma within the population that is eligible or enrolled in Medicaid.

Most of the information that describes the burden of asthma will come from the Louisiana Behavioral Risk Factor Survey (BRFSS). In the year 2004 and 2006 the Louisiana BRFSS included an adult asthma history module that asks questions pertaining to the control and management of asthma. For the same stated years the Louisiana BRFSS included the asthma childhood prevalence module, an estimate of the number of households with a child diagnosed with asthma was provided. LAMP will continue to collect data pertaining to asthma control and management in future years and will also continue to collaborate with other state agencies including: the LA Medicaid program, the LA Office of Vital Statistics, and the LA Department of Environmental Quality to provide information for future surveillance reports.

Louisiana Asthma Plan

Following the strategic planning meeting, the Chronic Disease Prevention and Control Unit's Asthma Management and Prevention Program continued working with the newly formed Louisiana Childhood Asthma Surveillance Collaborative (LASC) to accomplish the goals and objectives of the aforementioned grant. These objectives included establishing a pilot surveillance system, establishing and sustaining itself as Louisiana's statewide working group on asthma, and developing a state asthma plan. The LASC has five workgroups with accompanying leads which meets monthly between quarterly meetings of the LASC and assist in developing the strategies of the four priority areas.

The LASC and its workgroups consist of healthcare providers, certified asthma educators, respiratory therapists, registered nurses, health educators, environmental specialists, epidemiologists, state agency representatives, a Louisiana Public Health Institute representative, tobacco prevention and control program administrators and stakeholders, chronic disease program administrators, parent organizations, Louisiana Bureau of Health Services Financing (Medicaid), and advocacy and policy coordinators.

Louisiana Asthma Program Goals:

Goal 1: Louisiana Department of Health and Hospitals will develop a comprehensive asthma program which will include targeting community outreach.
Goal 2: Increase asthma education to healthcare providers, clinicians, health educators and support staff.
Goal 3: Improve the quality of life and space of asthmatics through advocacy and policy.
Goal 4: Develop a comprehensive system of data surveillance to express the burden of asthma statewide and the contributing factors to this burden.
Goal 5: Identify and eliminate health inequities related to asthma in Louisiana.
Goal 6: Develop a comprehensive evaluation plan.

Implementation Plan

The DHH Bureau of Primary Care and Rural Health's Chronic Disease Prevention and Control Unit's Asthma Management and Prevention Program, as well as the stakeholders of the LASC identified its major next step as developing an implementation plan that will be revisited quarterly and evaluated on an annual basis.

The ongoing collaboration provides a platform for all participating stakeholders to establish their roles in the implementation plan, which assures that the State's objectives and strategies are accomplished; assists with the enhancement of the statewide data and surveillance system; provides technical assistance to the state health department; improves the State's delivery of care for asthmatics through effective and efficient health education, community outreach, advocacy and policy; and prioritizes efforts related to eliminating health disparities through the strategic activities outlined in the LAMP state plan. [3]

Healthy People 2010 Asthma Objectives [4]

24-2. Reduce the number of hospitalizations due to asthma.

24-5. Reduce the number of school or work days missed by persons with asthma due to Asthma.

24-6. Increase the proportion of persons with asthma who receive formal patient education, including information about community and self-help resources, as an essential part of the management of their condition.

Summary of Report Findings on Asthma in Louisiana

Key Findings

- Over the last seven years, LA has ranked lower than the US in the current asthma diagnosis, with exception of 2008, when the state nearly caught up the nation's average (8.4% US vs. 8% LA).
- Hispanic adults in 2008 reported higher prevalence for current asthma compared to other racial/ethnic groups.
- From 2005-2008 African Americans also reported higher rates of asthma diagnosis compared to other race groups.
- 11.7% of adults in Louisiana have been diagnosed with asthma.
- In 2008, the percentage of residents between the ages of 18-24, with current asthma, doubled from 6.3% to 13.3%.
- Approximately 10.4% of the residents who reported to have current asthma have no health insurance, compared to 7.5% of residents who have insurance and currently have asthma.
- Parishes with the highest prevalence rates included; Pointe Coupee, Morehouse, Lincoln, West Carroll, Washington and St. John the Baptist.
- According to the YRBS, nearly 23% of high school students (n=1280) had ever been diagnosed with asthma and of those 14% currently suffer with asthma.
- Approximately 5.1% of children have missed school due to asthma in the past 12 months.
- As student grade levels increased, the missed school rates, due to asthma, also increased in 2008.
- The average age adjusted asthma hospitalization rate, over the seven year period, was 159.04/100 000 residents.
- During 2002 -2008, children under five had the highest hospitalization rate of all age groups.
- The Louisiana Delta Region reported most of its parishes with higher annual rates of asthma hospitalizations in Louisiana.
- Lafourche Parish reported the highest annual rate (1050/100,000 residents) of asthma hospitalizations for years 2005-2008.
- The overall rate of asthma mortality for Louisiana residents has declined from the year 2002 to 2007.
- The asthma mortality rate increases as age increases.

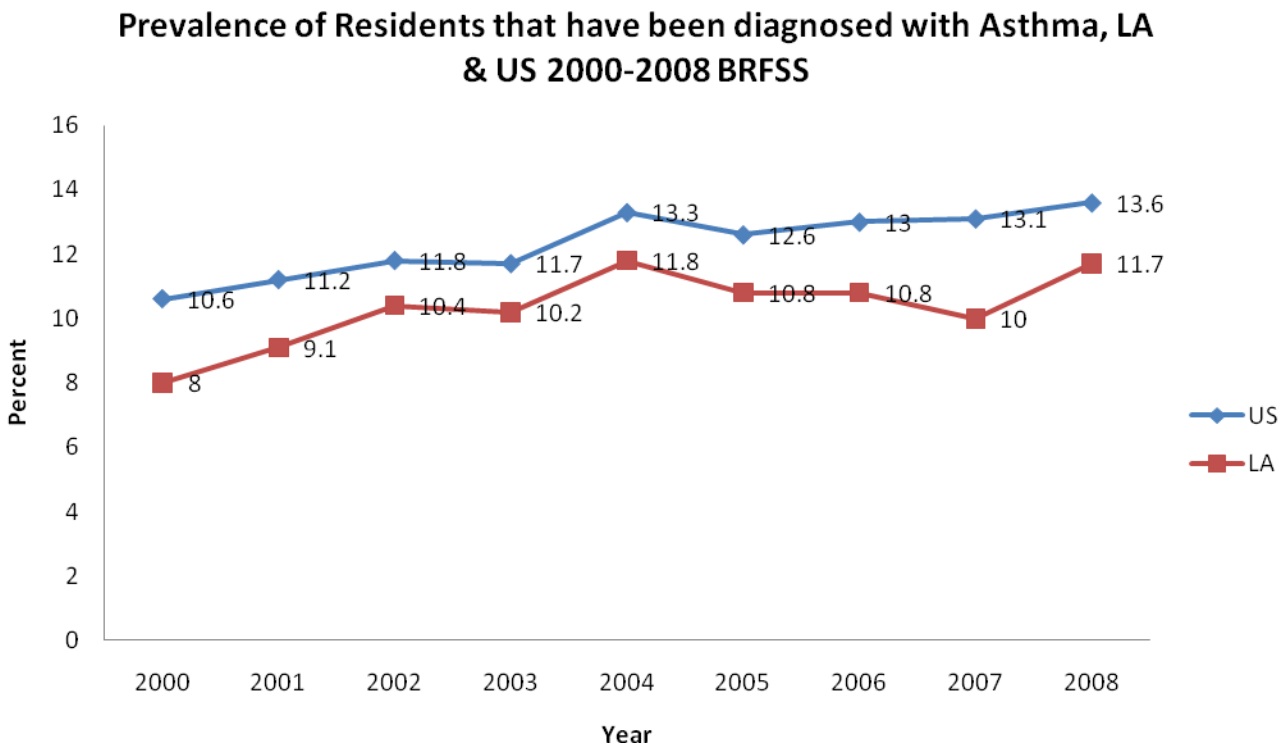
Section 1: Asthma in Adults

Asthma Adult Prevalence

Prevalence is defined as the proportion of the population with a particular characteristic at a specific point in time. Asthma prevalence is essential in assisting us to define who has asthma, how many are burdened with the disease and any demographical differences.

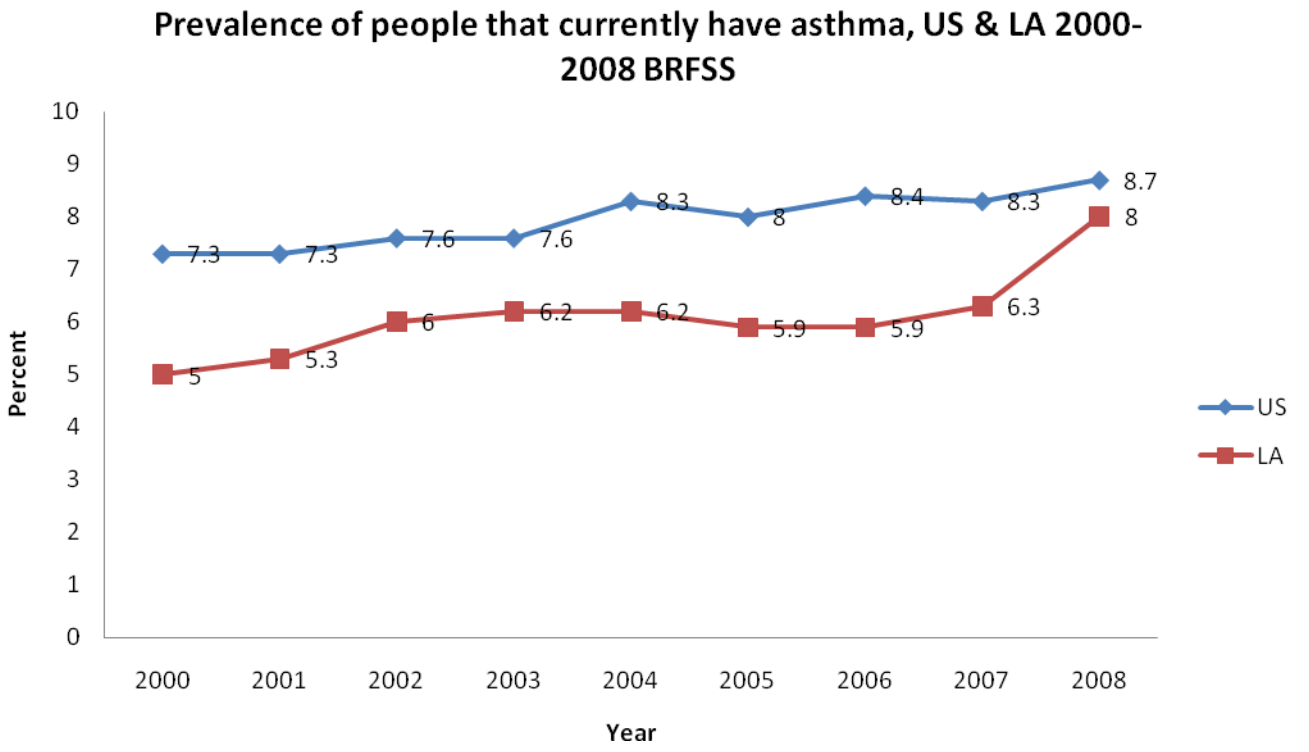
In 2008, an estimated 11.7% of the adult population (203,641 residents) had been diagnosed with asthma at some point of their life by a healthcare worker. When observing the trend for years 2000 to 2004, there was an increase in the prevalence of asthma diagnosis, however, the prevalence decreased slightly from years 2004 to 2007, but increased in 2008 (Fig. 1). The prevalence of asthma diagnosis for Louisiana residents remained lower than the national average from 2000 to 2008 (Fig. 1).

Figure 1, Prevalence of LA Residents Ever Diagnosed with Asthma, LA & US BRFSS 2000-2008



The prevalence for current asthma (the respondents that reported being diagnosed with asthma and **still** possess the symptoms) is lower than the prevalence for lifetime diagnosis of asthma. The estimated proportion of Louisiana residents that reported that he or she currently had asthma was 8% in 2007. The Louisiana prevalence for current asthma was consistently lower than the national average from 2000 to 2007. In 2008, the State's prevalence for asthma nearly caught up with the national average (Fig. 2).

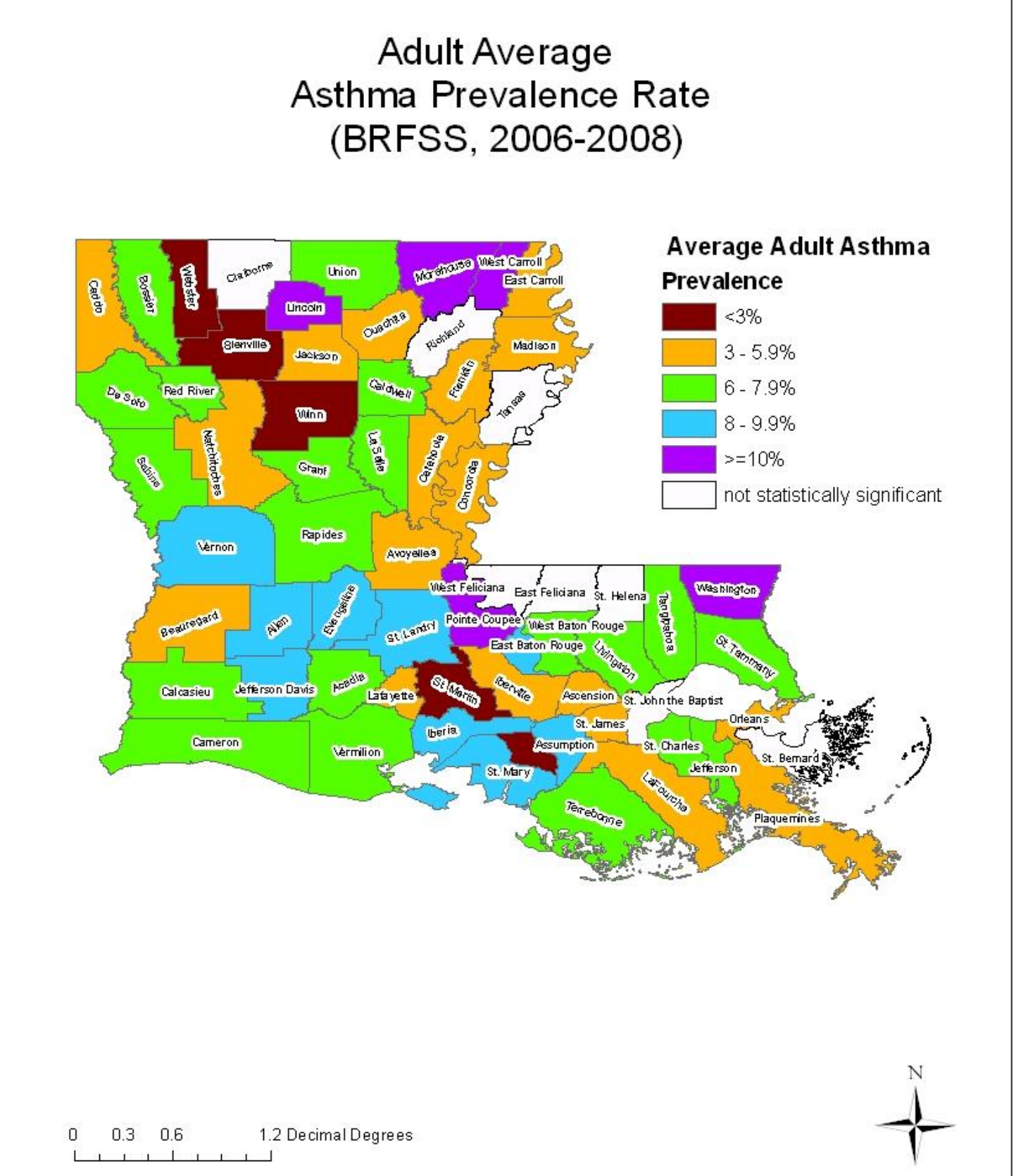
Figure 2, Prevalence of LA Residents Diagnosed, but Still Having Symptoms of Asthma, LA& US BRFSS 2000-2008



Geographical Distribution of Asthma in Adults

Mapping may also answer the epidemiological question of where the disease is occurring. Using BRFSS data based on the question assessing current asthma, prevalence rates where mapped by parish (Fig. 3). Calculations were done for the 64 parishes within the State for the combined years 2006-2008. Parishes with higher prevalence rates where located in a five parishes which included Pointe Coupee, Morehouse, Lincoln, West Carroll and Washington. However, due to a low sample sizes parishes that include Claiborne, West and East Feliciana, Richland, St Bernard, St Helena, Tensas and St. John the Baptist were labeled as not statistically significant.

Figure 3, Prevalence of Residents with Current Asthma by Parish, Louisiana BRFSS 2006-2008



Asthma Comorbidities

Asthma prevalence is related to comorbid conditions and behaviors such as smoking and obesity.

In the 2008 BRFSS, 29.6% of Asthmatics were current smokers. 71.6% of current asthmatic smokers have tried to quit at least in the past year. 21.9% of current asthmatics have been exposed to second hand smoke in their home in the past week.

In terms of obesity as a comorbidity condition, 9.7 % of asthmatics had a normal body mass index of less than 25, whereas asthmatics that were either obese or overweight were 12.7%.

Demographic Characteristics among Adult Asthmatics

Table 1, Demographic Characteristics among Adult Asthmatics, LA BRFSS 2008

Demographic Characteristics	Current Asthma*			Lifetime Asthma**		
	Sample Size	%	95% CI	Sample Size	%	95% CI
Age						
18-24	33	13.3	9.1-19	46	17.7	13-23.8
25-34	48	7.7	5.6-10.6	73	11.9	9.2-15.2
35-44	73	7.4	5.5-9.8	102	11.2	8.9-14
45-54	113	7.5	6-9.4	162	11.1	9.3-13.3
55-64	104	6.8	5.5-8.5	152	10.4	8.7-12.4
65 or older	120	6.2	5.1-7.6	159	8.8	7.4-10.4
Gender						
Female	388	9.6	8.3-11	504	12.3	10.9-13.8
Male	103	6.3	4.9-8	190	11.1	9.3-13.1
Race						
Caucasian	342	7.6	6.6-8.8	488	11.5	10.2-12.9
African-American	114	9.4	7.2-12.1	155	12.7	10.3-15.7
Hispanic	13	10.2	4.8-20.4	16	12.2	6.4-22.4
Other	19	5.1	2.9-8.7	27	7.8	4.9-12.1
Education						
Did not graduate HS	89	13.6	10.5-17.5	112	17.6	14.0-21.8
Graduated HS	154	9.0	7.1-11.2	213	12.2	10.1-14.6
Attended College	136	7.7	6-9.9	192	11.9	9.8-14.5
Graduated College	111	5.4	4.2-6.9	175	8.9	7.4-10.8
Household Income						
<15000	94	15.8	12.2-20.3	116	19.7	15.7-24.4
15000-24999	84	9.4	6.9-12.7	106	12.3	9.4-16
25000-34999	49	7.3	5.4-12.8	62	10.7	7.4-15.2
35,000-49,999	46	7.3	5.1-10.5	82	12.7	9.6-16.6
50,000+	123	5.2	4.1-6.5	194	8.8	7.4-10.8
Health Insurance Coverage						
Have Insurance	391	7.5	6.5-8.7	558	11.0	9.9-12.3
No Insurance	100	10.4	8-13.6	136	14.9	12.0-18.5

*Proportion of respondents that indicated they currently had asthma
** Proportion of respondents that indicated they were diagnosed with asthma by a health professional at some point in their life

Demographic characteristics help us to establish disparate populations affected by asthma. The Centers for Disease Control (CDC) reports that the rates for asthma tend to be higher for children, women, African-Americans and lower income groups. In Louisiana these trend findings appear to be consistent with CDC and other state findings (Table 1).

Race and Asthma Clinical Factors

When comparing the prevalence rates for lifetime with current asthma among racial groups for the State of Louisiana, Hispanics reported the highest prevalence of current asthma (10.2%), compared to other racial / ethnic groups (Table 1).

The Adult Asthma History Module is comprised of ten questions incorporated within the 2006 BRFSS and asked a series of questions for respondents that indicated that he or she had been diagnosed with asthma by a healthcare professional at some point in their life. The questions within the module cover sleep deprivation, asthma attacks within the year, use of inhalers, physical activity limitations, age of asthma diagnosis, emergency room visits and urgent care. The distribution of emergency room visits and urgent care due to asthma related events among racial groups, show that African-Americans were more likely to visit the emergency room and receive urgent care for asthma when compared to Caucasians (Table 2).

Caucasians had the higher rate (56.9%) for experiencing at least one asthma attack within a twelve month period, when compared to African-Americans (38.1%). When observing self-management practices, there were no significant differences among the racial groups for the usage of inhalers, annual checkups and monthly medication dosage for asthma (Table 2).

The burden of asthma had a more significant impact for African-Americans who were more likely to report problems with sleep deprivation, when compared to Caucasians. African-Americans also had a higher average of the number of days missed from school/work due to asthma, when compared to Caucasians (Table 2).

Table 2, Asthma Burden and Clinical Factors by Race BRFSS, 2006

Table 2. Asthma Burden and Clinical Factors by Race BRFSS, 2006		
	Caucasians	**African-Americans**
Asthma Diagnosis	10.9%	10.6%
Current Asthma	6.1%	5.8%
At least one visit to ER / year	16.3%	32.9%
Urgent Care / year	32.8%	41.8%
Asthma Check up / year	59.8%	57.4%
Asthma Attack / year	56.9%	38.1%
Use of Inhaler / month		
1-14 times	37.2%	33.7%
15-59 times	13.6%	12.7%
60-99 times	1.6%	0.4%
100 or more times	0.1%	2.6%
None	47.2%	51.6%
Asthma Medication / month		
1-14 days	21.2%	24%
15-30 days	38%	30%
None	40.6%	45.8%
Sleep Deprivation / month		
1-10 days	33%	51%
>10days	6.7%	10.2%
None	60.2%	38.6%
Mean Number of Days of Limited Physical Activity / year	6.6	12.1

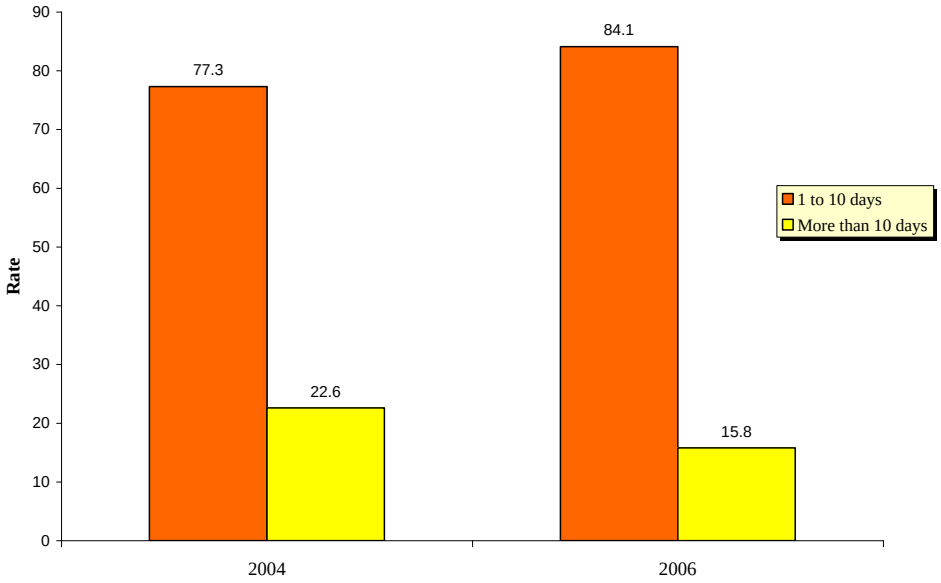
Quality of Life

When asthma is poorly controlled, it often results in symptoms that limit activities, including days unable to work and poor health, including difficulty sleeping.

In 2004 and 2006 the BRFSS incorporated the Adult Asthma Module that asked a series of questions relating to the burden of asthma. The percentage of respondents that experienced sleep deprivation for more than ten days due to asthma decreased to 15.8% (9,290 residents) in 2006 (Fig. 4).

Figure 4, Asthma and Sleep Difficulty in the Past 30 Days

Figure 4. During the Past 30 Days How Many Days Did Asthma Cause Difficulty in Sleeping?



In 2006, the percentage of respondents with asthma that were unable to work at least one day within the past 12 months due to asthma increased to 33% when compared to 2004 (25.7%) (Fig. 5).

Figure 5, Asthma Attacks and Missed Work Days within the Past 12 Months

Figure 5. Asthma Attacks and Unable to Work at Least One Day Due to Asthma Within Twelve Months

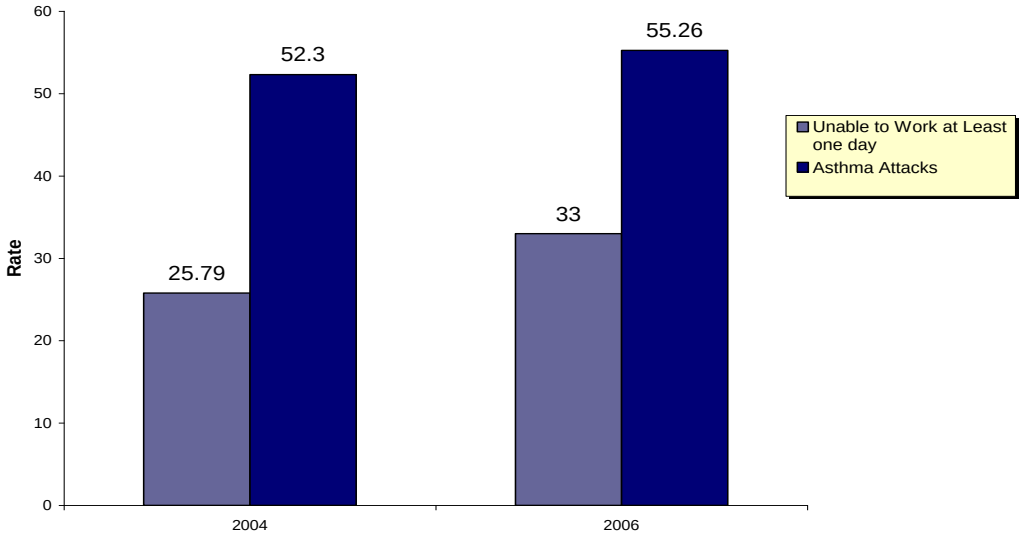
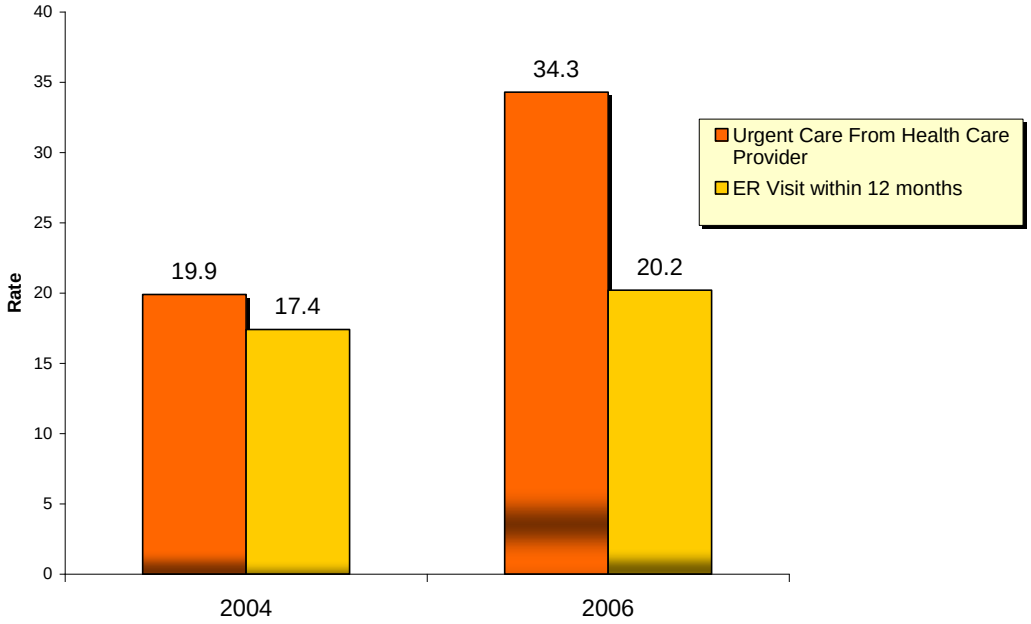


Figure 6, Urgent Care and Emergency Room Visits for Asthma-Related Events

Figure 6. Urgent Care and Emergency Room Visits for Asthma Related Events 2004 & 2006



In 2006, the percentage of residents with asthma that received urgent treatment for worsening asthma conditions increased to 34 % (65,113 residents).There was a slight increase for emergency room (ER) visits within 12 months for asthma related events in 2006 (20.2%) compared to 2004 (17.4%) (Fig. 6).

Section 2: Asthma Childhood Prevalence

In Louisiana, BRFSS has provided data among adults since 2000 in which trends can be established over time. However, childhood prevalence data is limited, as data has been collected intermittently and used multiple data sources or surveys which have made it difficult to draw conclusions about asthma in Louisiana.

In 2007, according to BRFSS, an estimated 12% of the households within the State had a child that had been diagnosed with asthma by a healthcare professional and 2.7% of the households indicated that the child currently had asthma. In addition to the BRFSS survey, the Youth Risk Behavior Survey (YRBS) included questions on lifetime and current asthma prevalence for youth enrolled in grades 9-12. According to the 2008 Louisiana YRBS, nearly 23% of high school students (n=1280) had ever been diagnosed with asthma and 9% still suffer from asthma. Similarly, according to the 2008 Louisiana Youth Tobacco Survey 11.2% of high school students currently suffer from asthma, while 13% of middle school students also suffer from this illness.

In terms of gender differences, females show a higher prevalence of current asthma illness (10.4 %) than males (7.6 %), while males show a higher prevalence than females (21%) (YRBS, 2008) for a lifetime diagnosis of asthma (24.3%). Grade and age differences among high school youth show that 15 year olds and those younger, show the highest prevalence of current asthma illness at 9.4% and 12th graders at 10.1% (YRBS, 2008). As the grade level increases, prevalence of currently having asthma also increases. Black or African American youth were more likely to report currently having asthma when compared to white youths (9%).

Approximately 5.1% of youth missed school because of asthma, on one or more days during the past 12 months. The percentage of students who visited emergency rooms or urgent care centers due to asthma, one or more times during the past 12 months, was 4.3%. Boys (5.0%) were more likely to have visited an emergency room, as compared to the girls (3.3%). 8.2% of the students saw a doctor or nurse for a routine check-up for their asthma one or more times during the past 12 months. (YRBS, 2008)

Section 3: Asthma Mortality

The overall rate of asthma mortality for Louisiana residents declined from 2002 to 2007. The highest asthma related deaths rates occurred in 2000 and 2002.

Figure 7, Rate of Asthma Deaths per 100,000 Population by Year, Louisiana, 2000-2007

Blacks or African Americans have a higher asthma mortality rate for Louisiana residents, as compared to Whites over the period (Fig 8).

Figure 8, Rates of Asthma Deaths per 100,000 Population by Year and Race, Louisiana 2000-2007

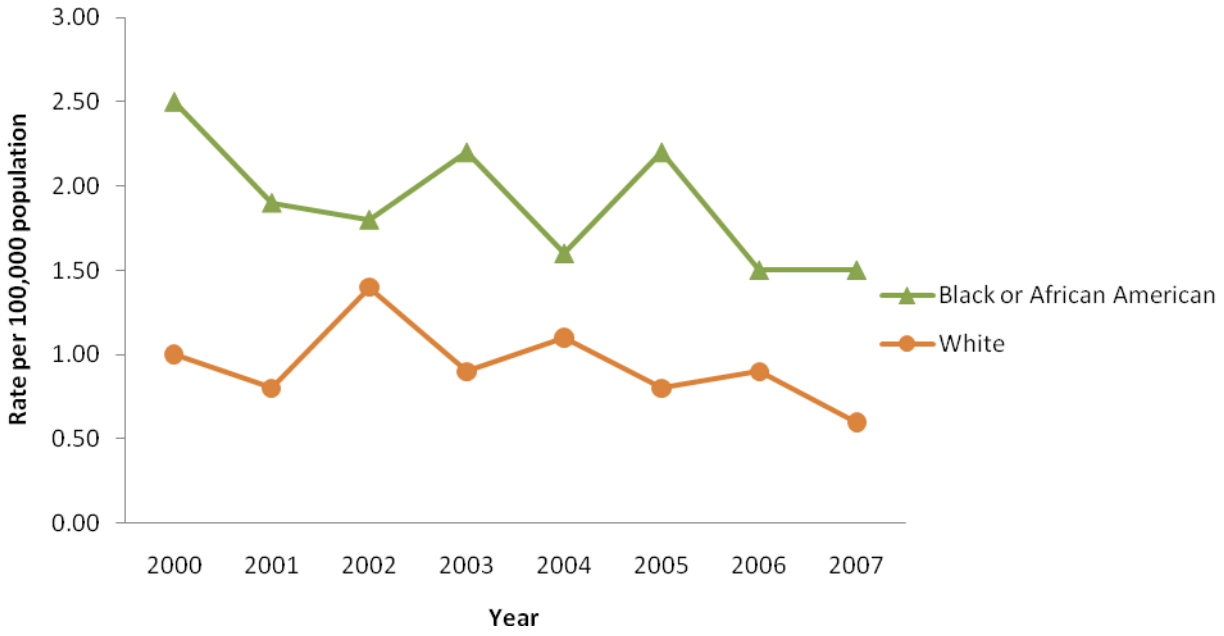
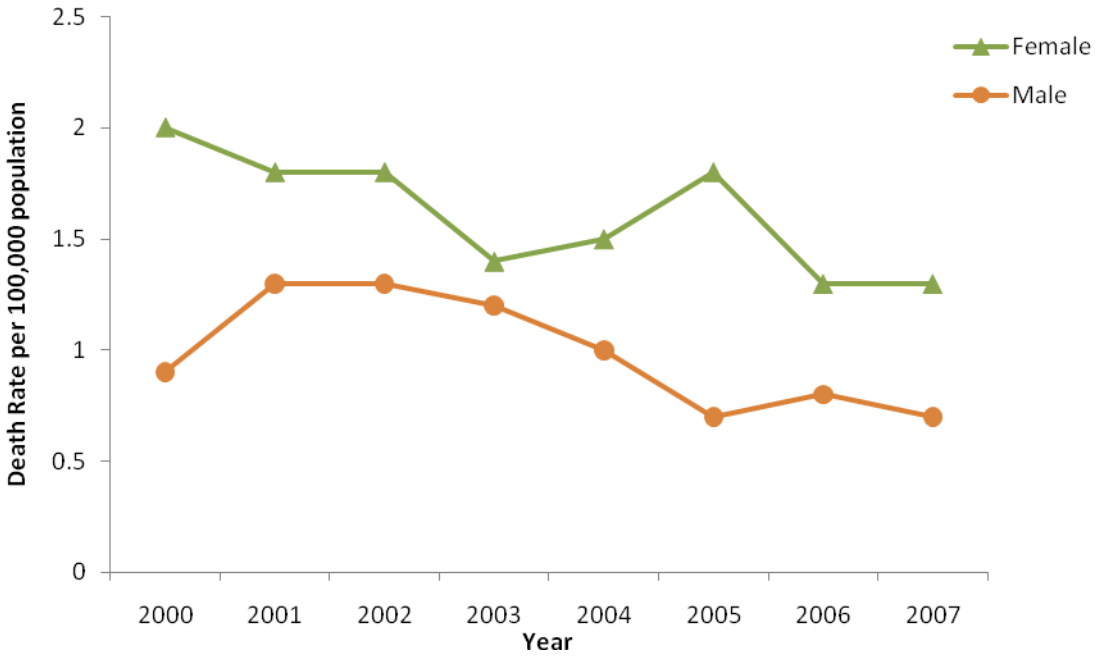
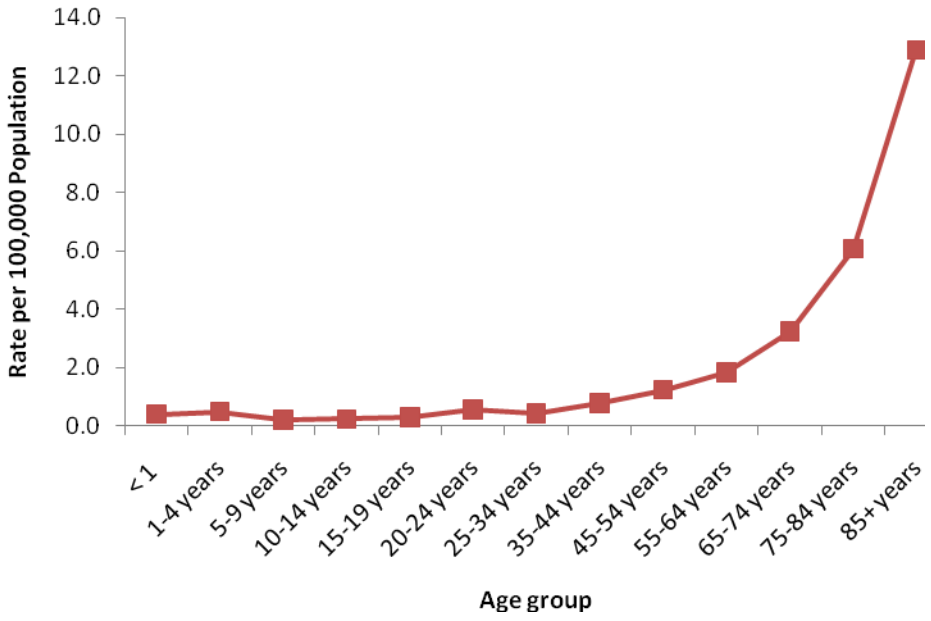


Figure 9, Rates of Asthma Deaths per 100,000 Population by Year and Gender, Louisiana 2000-2007



The overall age-adjusted asthma mortality rate was 1.3 per 100,000. Asthma mortality rates increase as age increases (Fig 10).

Figure 10, Rates of Asthma Deaths per 100,000 Population by Age Group, Louisiana 2000-2007



Healthy People 2010

The Healthy People 2010 initiative is a framework for national health objectives designed to identify health disparities and encourage preventive measures to improve the health of the entire population within the United States. Asthma deaths for Louisiana children aged 5-14 years and adults aged 45-64 years increased during the 2006-2007 period – *(Population data after Hurricane Katrina may affect the findings and results being observed after 2005)*. Asthma deaths decreased for ages 65 years and above and between ages 15-34 years. The mortality rates for age groups 0-4, 15-34 and 35-64 years of age were higher than the Healthy People 2010 goals, as well as the US 2005 population for both 2000-2002 and 2003-2005 time periods. The 2003-2007 asthma mortality rate for adults, aged 65 years and above, remained lower than the Healthy People 2010 goal but was higher when compared to the US 2005 asthma mortality rate (Table 3).

Table 3, Healthy People Objective, US and Louisiana Asthma Deaths / 1,000,000 People

	Healthy People Objective, US and Louisiana Asthma Deaths / 1,000,000 People				
Age Group	US 2005	LA 2000-2002	LA 2003-2005	LA 2006-2007	Healthy People 2010
0-4	2	6.3	8.4	6.8	1
5-14	2.4	3.8	1.9	6.7	1
15-34	4.1	5.9	6.4	7.3	2
35-64	12.7	16.6	11.8	24	9
65+	52.3	69.3	58.6	59	60

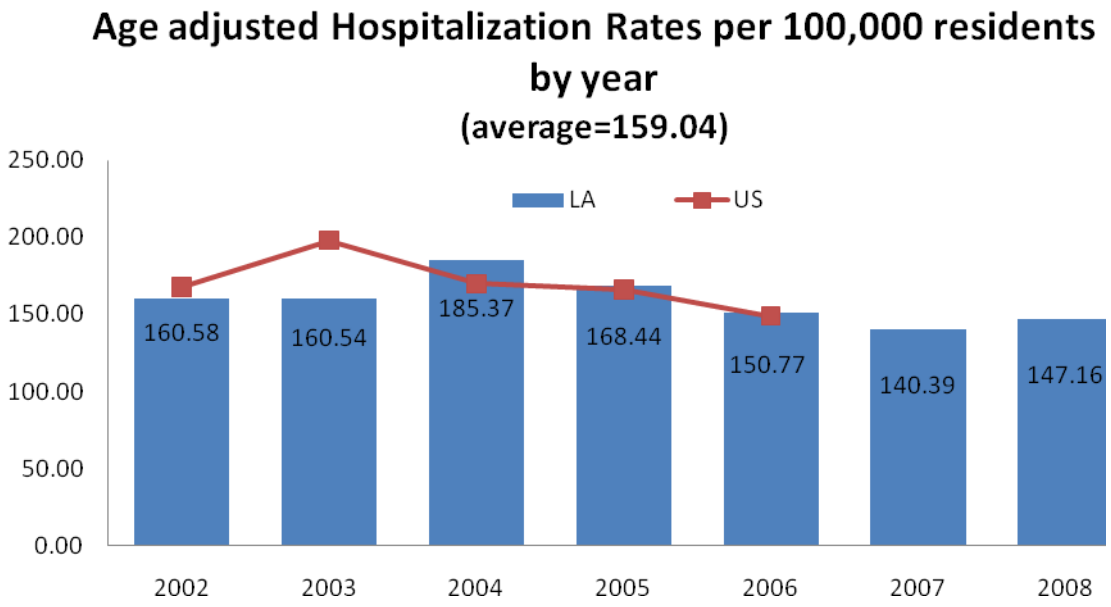
Section 4: Asthma Hospitalizations

The Louisiana Hospital Inpatient Discharge Database (LAHIDD) is a statewide surveillance system that collects data from licensed hospitals with approximately a 70% response rate from acute care hospitals, which varies yearly. Long term, psychiatric, rehabilitation and specialty hospitals also provide data to LAHIDD, but the majority of hospitalizations are acute care facilities. The database offers a unique source of information for public health surveillance and clinical operations. This system can be manipulated to generate reports based on several different factors including; age, gender, parish, time of arrival, time of discharge, final diagnosis, and more. Emergency room visits are not included in the LAHIDD.

Asthma is among the many diseases specifically included in the system. The Louisiana Asthma Management and Prevention (LAMP) program generated reports on hospitalizations among its residents that were hospitalized due to asthma. An asthma hospitalization in LAHIDD is thus defined as having a principal diagnosis with an International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) code of 493.

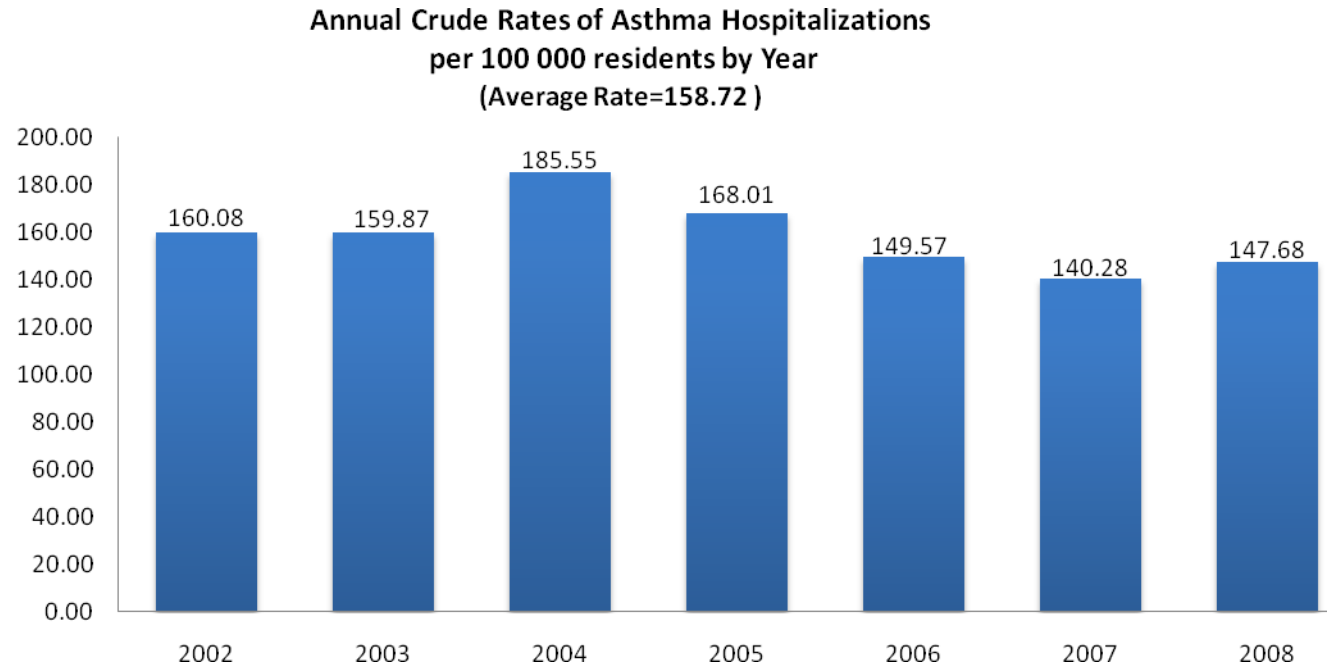
Below are crude and age specific asthma hospitalization rates estimated using the State of Louisiana population estimates and the US Census data for years 2002-2008.

Figure 11, Age-adjusted Asthma Hospitalization Rates per 100,000 Residents by Year, Louisiana 2002-2007



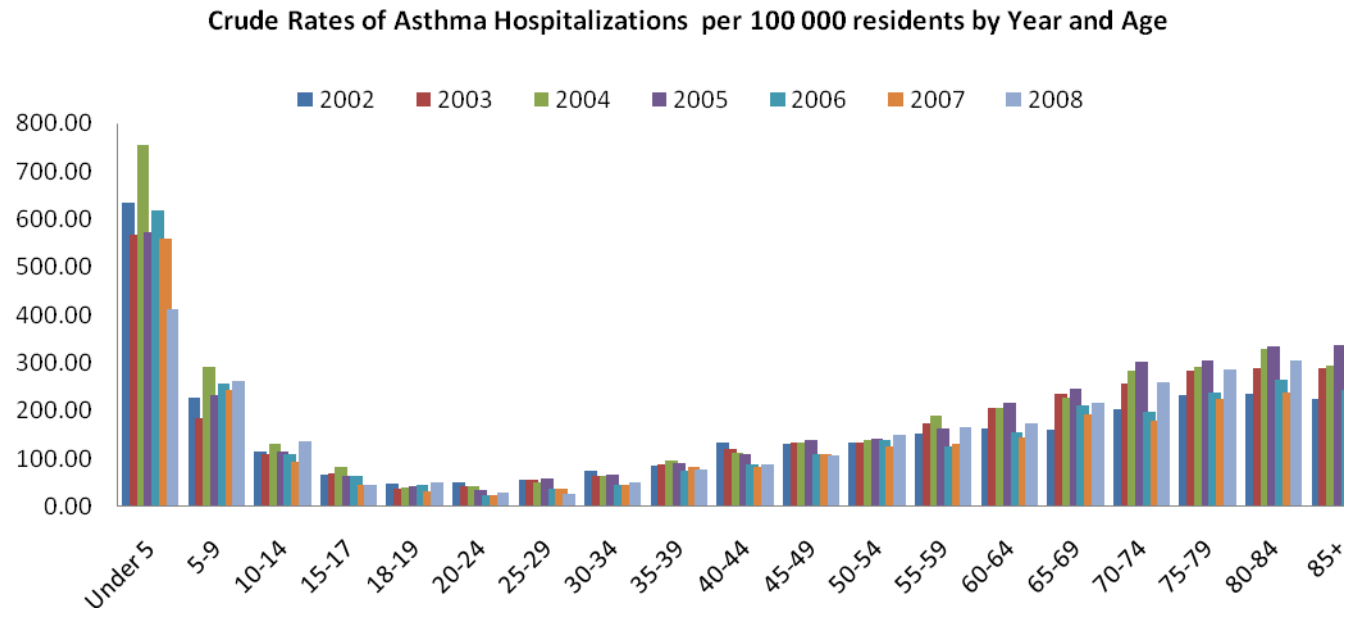
The average age-adjusted asthma hospitalization rate over the seven year period is 159.04/100 000 residents. These rates for Louisiana are slightly lower than the US asthma hospitalization rates according to the National Hospital Discharge Survey for the years 2002-2006. However, according to the National Hospital Discharge Survey for 2004, the Lousiana asthma hospitalization rate is higher than the national rate.

Figure 12, Annual Crude Rates of Asthma Hospitalizations per 100,000 Residents by Year, Louisiana 2002-2007



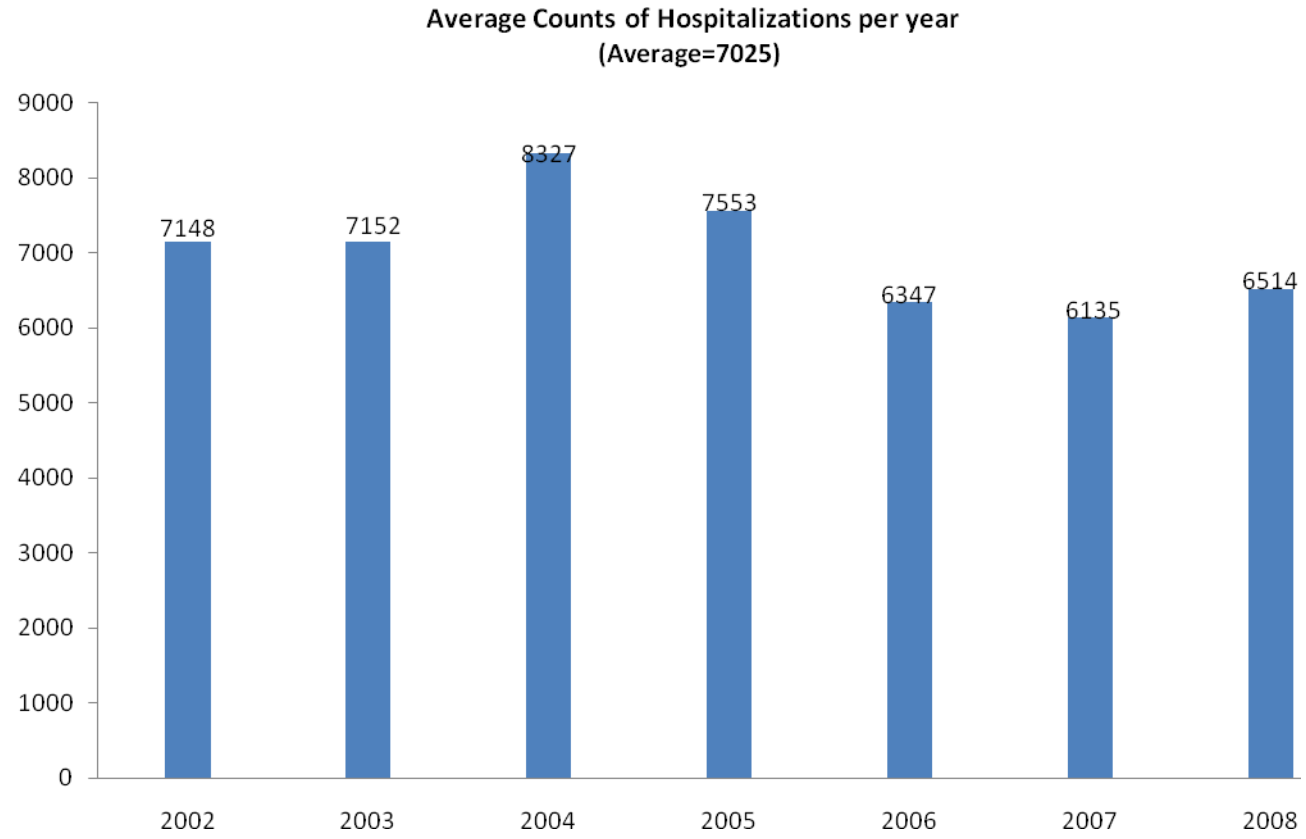
The LAHIDD rates did not change significantly from 2002 to 2008 (Fig 1 and Fig 2) both crude and age-adjusted rates.

Figure 13, Crude Rates of Asthma Hospitalization per 100,000 Residents by Year and Age



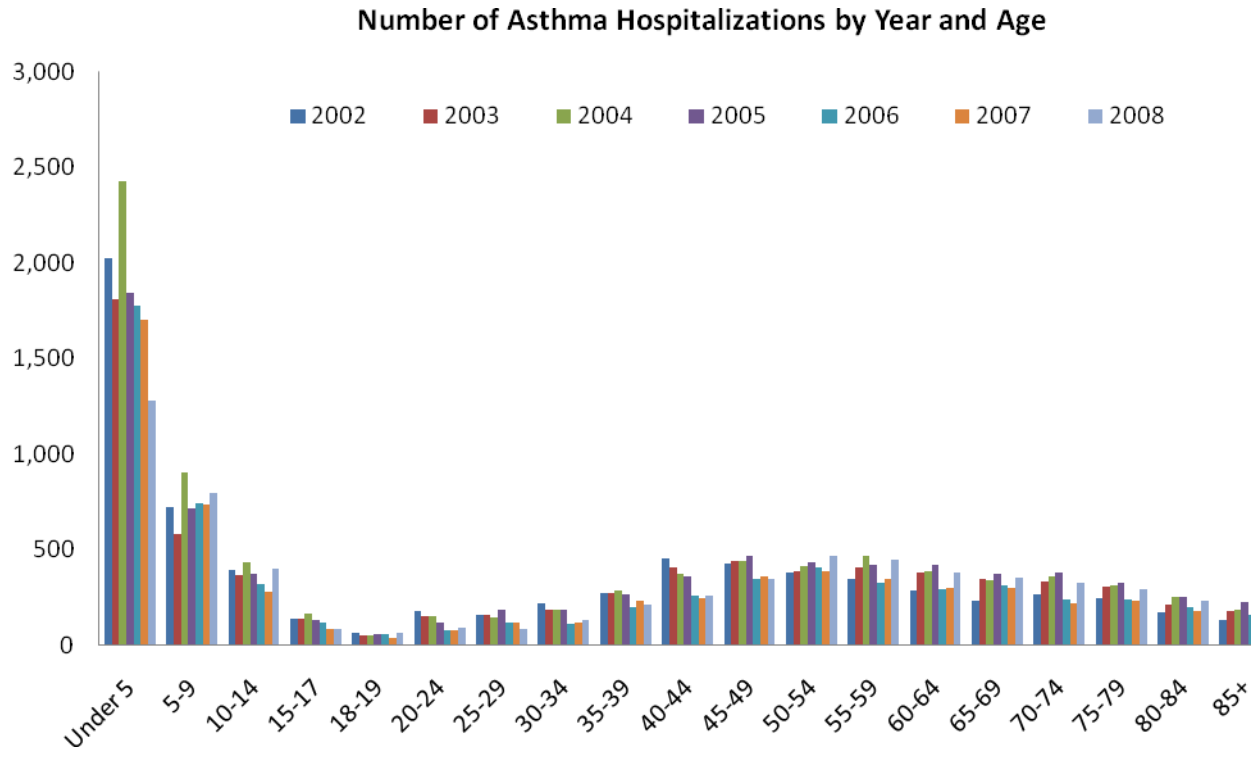
During 2002 -2008, children under five had the highest hospital discharge rates of all age groups. The rate for asthma hospitalizations decreased during adolescent years, but increased around age 30 (Fig 13).

Figure 14, Average Counts of Hospitalizations by Year, Louisiana 2002-2007



The number of hospital discharges due to asthma decreased in Louisiana by approximately 22% from 8,327 prior to Hurricane Katrina, to 6,514 in 2008 (Fig 14).

Figure 15, Average Counts of Hospitalizations by Year, Louisiana 2002-2007



Geographical Distribution of Asthma Hospitalizations

The mapping of asthma hospitalizations enables programs to assess if cases of asthma differ geographically. The average annual rates were calculated for 64 parishes within the State for the combined years 2005-2008. Parishes with high rates are located throughout the State, but highest rates seemed to be located in the Delta Region. Four of the six parishes (Caldwell, Catahoula, Tensas and Madison) reported the highest annual rates in the region (Fig. 16). Lafourche Parish reported the highest annual rate (1050/100,000 residents) of asthma hospitalizations for years 2005-2008.

Figure 16, Average Annual Asthma Hospitalizations by Parish, LAHIDD 2005-2008

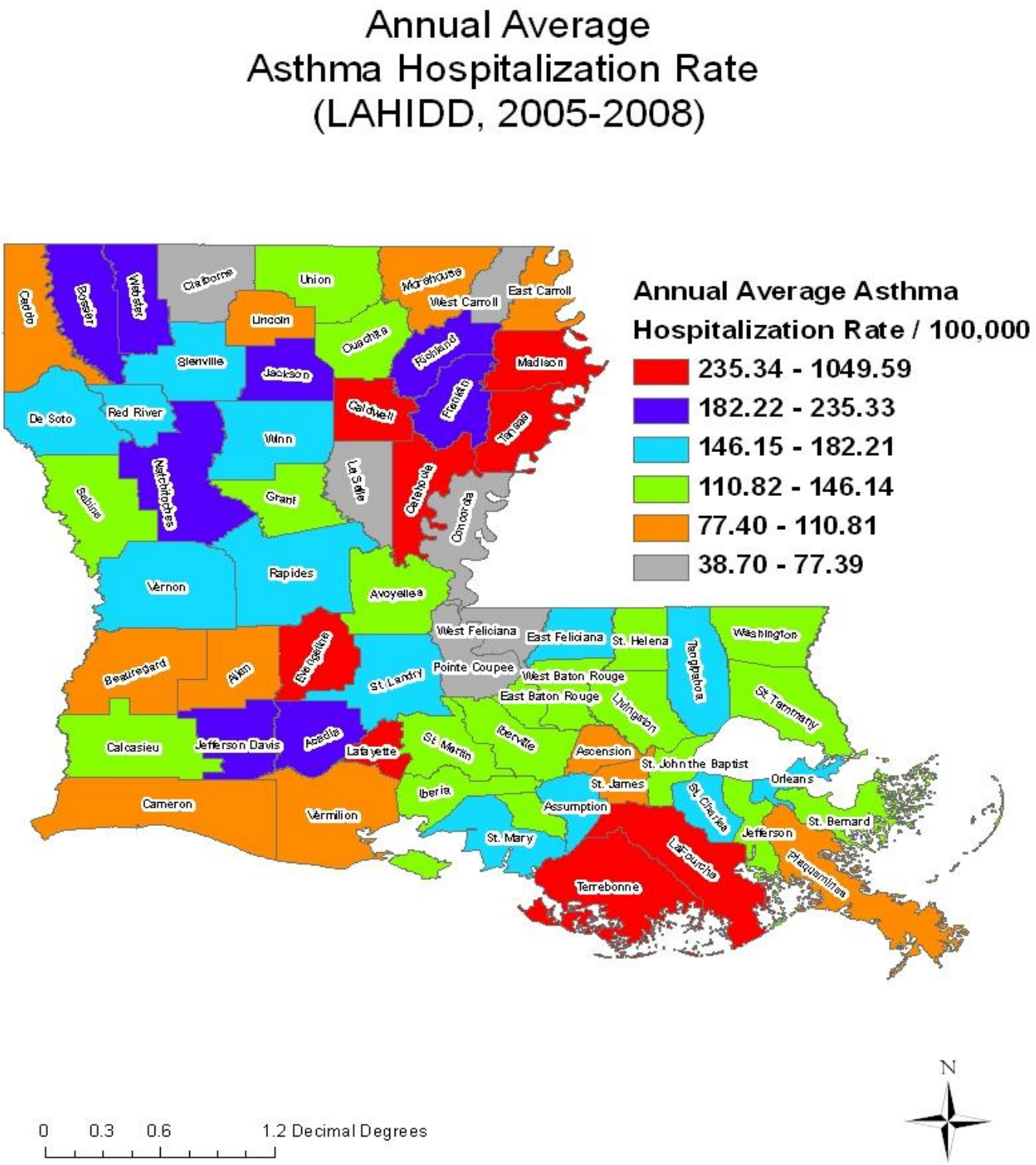
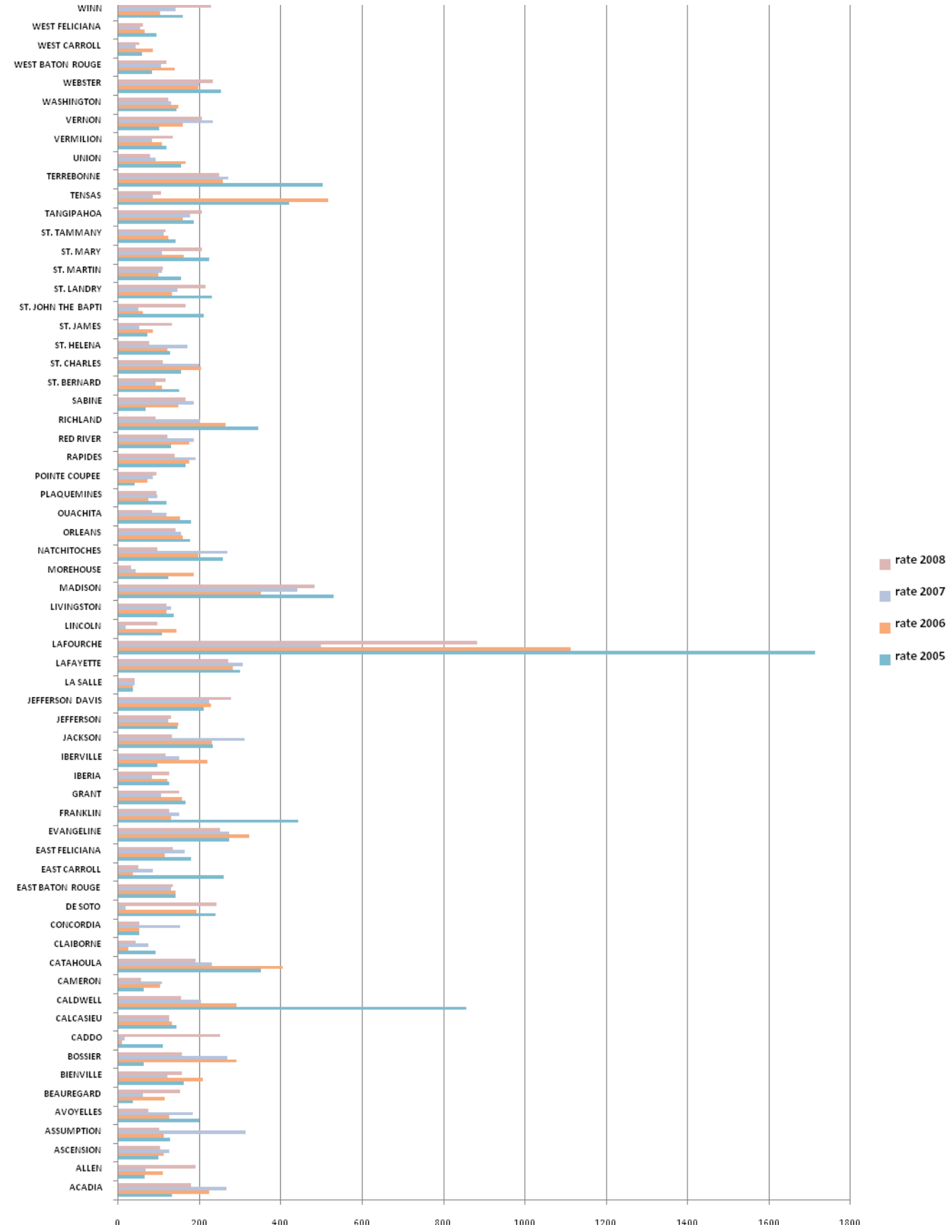


Figure 17, Annual Asthma Hospitalizations per 100,000 Parish Residents by Year and Parish, LAHIDD 2005-2007



Section 6: Medicaid and Asthma

The following analysis is based on "paid and adjusted Louisiana Medicaid claims." The study period was January 1, 2008 to December 31, 2008, with a six month completion period for asthma-related expenditures recipients needed to meet the following criteria:

1. Recipients were identified as having persistent asthma if they met at least one of the following criteria during both the measurement year and the year prior to the measurement year.
   - At least one Emergency Room visit, with asthma as the principal diagnosis
   - At least one acute inpatient discharge, with asthma as the principal diagnosis
   - At least four outpatient asthma visits, with asthma as one of the listed diagnosis and at least two asthma medication dispensing events
   - At least four asthma medication dispensing events

2. A recipient identified as having persistent asthma with at least four asthma medication dispensing events, where Leukotriene Modifiers were the sole asthma medication dispensed in that year, must also meet one of the following criteria:
   - Meet any of the other two criteria in step one, in the same year as the Leukotriene Modifier, or
   - Have at least one diagnosis of asthma in any setting, in the same year as the Leukotriene Modifier.

Excluded from the eligible population were all residents diagnosed with emphysema or COPD, anytime on or prior to December 31, 2008. A claim with a primary or a secondary diagnosis of asthma or asthma-related pharmacy claims was counted toward asthma-related costs.

Asthma Prevalence among Medicaid Recipients in Louisiana

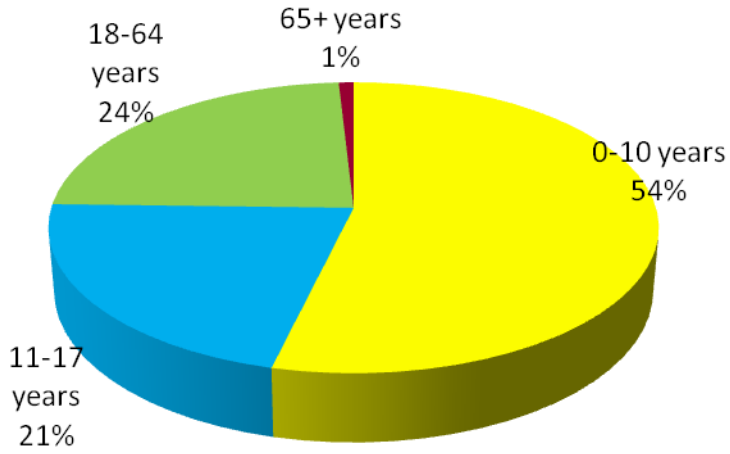
Table 4, Asthma Prevalence among LA Medicaid Recipients

Age Group	# of Enrollees	# of Asthma	Prevalence
0-10	453,614	14,435	3.18%
11-17	228,430	5,805	2.54%
18-64	413,917	6,359	1.54%
65+	111,286	240	0.22%
Total	1,207,247	26,839	2.22%

Note: Results were based on 2008 enrollment data. Also, # of enrollees and # of Asthmatic recipients were calculated from recipients eligible at least one month during 2008.

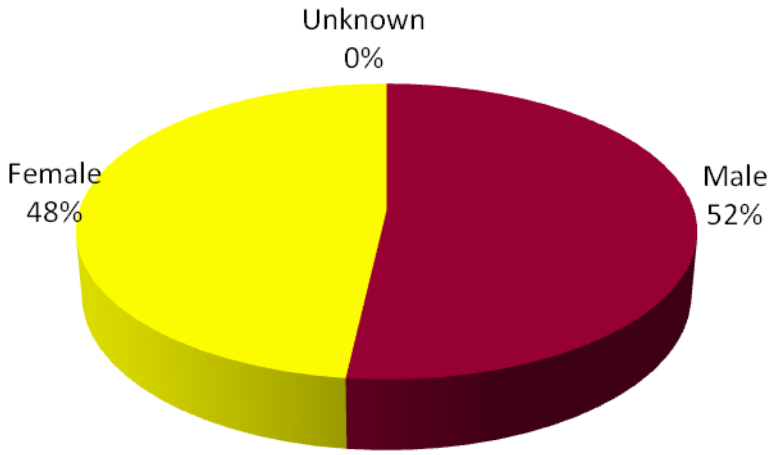
Asthma Recipients by demographic age

Figure 18, Asthma Recipients by Age



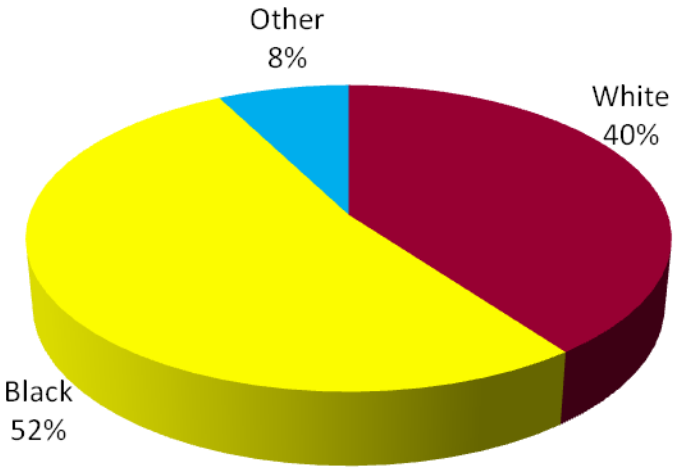
Asthma Recipient by Gender

Figure 19, Asthma Recipients by Gender



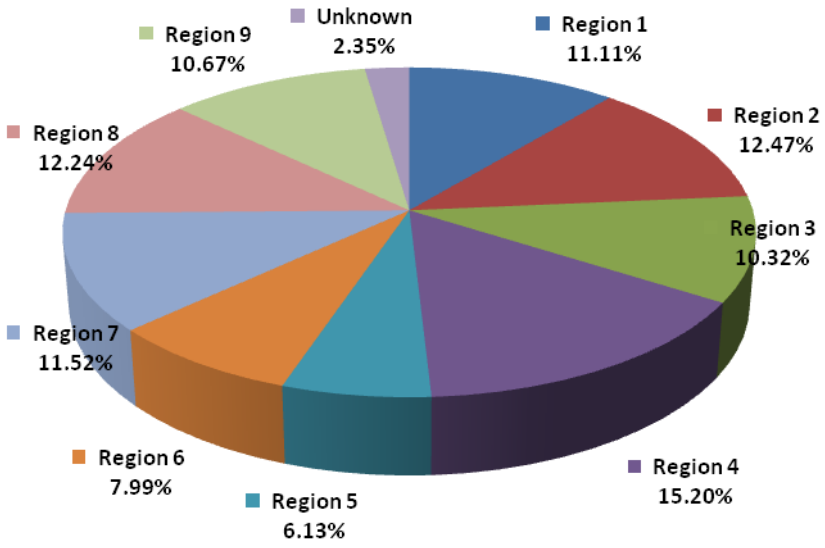
Asthma Recipients by Race

Figure 20, Asthma Recipients by Race



Asthma Recipients by Region

Figure 21, Asthma Recipient by Region



Expenditure by Age, Gender and Racial Groups

Table 5, Expenditure by Age, Gender and Racial Group

Age	# of Recipients	# of Claims	Cost	Cost Per Recipient
0-10	14,435	235,902	$ 27,172,960	$ 1,882
11-17	5,805	100,437	$ 9,947,703	$ 1,714
18-64	6,359	138,169	$ 16,971,763	$ 2,669
65+	240	4,181	$ 588,803	$ 2,453

Sex	# of Recipients	# of Claims	Cost	Cost Per Recipient
Male	13,908	238,669	$ 27,064,721	$ 1,946
Female	12,929	239,987	$ 27,605,968	$ 2,135
Unknown	2	33	$ 10,540	$ 5,270

Race	# of Recipients	# of Claims	Cost	Cost Per Recipient
White	10,696	182,352	$ 20,907,725	$ 1,955
Black	14,096	256,946	$ 29,435,894	$ 2,088
Other	2,047	39,391	$ 4,337,610	$ 2,119

Asthma Related Expenditures by Region

Table 6, Asthma Related Expenditures by Region

Region	# of Recipients	# of Claims	Cost	Cost Per Recipient
Region 1	2,981	55,745	$ 6,819,833	$ 2,288
Region 2	3,348	54,999	$ 5,906,980	$ 1,764
Region 3	2,771	48,167	$ 5,067,302	$ 1,829
Region 4	4,079	74,167	$ 8,467,961	$ 2,076
Region 5	1,645	25,826	$ 3,020,470	$ 1,836
Region 6	2,144	36,075	$ 4,079,575	$ 1,903
Region 7	3,092	59,101	$ 7,166,258	$ 2,318
Region 8	3,285	59,409	$ 6,877,519	$ 2,094
Region 9	2,864	51,987	$ 5,896,875	$ 2,059
Unknown	630	13,213	$ 1,378,456	$ 2,188

The asthma prevalence rate for Medicaid recipients decreased in 2008 (2.22%), when compared to 2007 (2.45%). The Medicaid population aged 10 years or less had the highest percentage of enrollees (3.23%) and number of claims (225,384) in both 2007 and 2008.

Additional data provided by the Louisiana Medicaid Program reveal that African-Americans had a higher percentage of asthma-related Medicaid claims, when compared to Whites. Gender had no significant impact on the amount of asthma-related claims in 2007 and 2008. The Medicaid population that were the most vulnerable with asthma were African-Americans under the age of 18. Also, people living in Region four were more likely to spend more in terms of asthma expenses, according to Louisiana Medicaid Claims.

Conclusion

The information supplied by the BRFSS, YTS and YRBS surveys, along with data provided by the Louisiana DHH Medicaid Program, the Louisiana Hospital Discharge Data, the DHH Office of Public Health Environmental and Toxicology Section and the DHH Office of Public Health's Vital Statistics Office have demonstrated the impact of asthma on the population within the State of Louisiana. Residents with asthma can live normal healthy lives by being knowledgeable of the common asthma triggers and reducing exposure to those triggers. Individuals with asthma must work with local healthcare providers to create a self-management plan that will educate them on the primary causes for asthma symptoms; teach them the importance of reducing exposure to triggers in order to avoid asthma symptoms; being compliant by always following the doctor's instructions on when to take the proper medication; and most importantly, knowing when to seek medical help. Understanding the importance of proper medication and the taking them according to schedule is very important. School teachers, as well as athletic staff, should learn to recognize an asthma attack and take the necessary steps when the attack occurs.

Asthma education, proper treatment, self-management and recognition of the risk factors will help reduce the severity and frequency of asthma attacks. The reduction of asthma attacks will also minimize the number of days missed from school or work, days spent in the hospital and emergency room visits. By reducing the burden of asthma for the residents of Louisiana, the quality of life for residents with asthma and their families will improve and promote a healthier lifestyle.

Appendix A. Data Sources

Behavioral Risk Factor Surveillance System (BRFSS)

The BRFSS is a state-based system of health surveys that was established by the Centers for Disease Control and Prevention (CDC) to assess the prevalence of and trends in health-related behaviors in the non-institutionalized adult population aged 18 years and older. Data are collected monthly from a random telephone sample of adults living in households with land line telephones. Currently, data are collected monthly in all 50 states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and Guam. More than 350,000 adults are interviewed each year, making the BRFSS the largest telephone health survey in the world. Louisiana has participated continuously in the BRFSS since its inception in 1984.

The BRFSS questionnaire is modified each year by the CDC in collaboration with participating state agencies has and consists of three parts. The first part is a core set of questions that is asked by all states, the second part consists of a series of topical modules developed by the CDC. States have the option of adding modules as they wish. Louisiana has used several of the CDC modules relating to asthma, including the Adult Asthma History. The final part of the questionnaire consists of questions designed and administered by individual states to address issues of local concern. These have been revised annually in Louisiana to maximize the survey's ability to address the needs of Louisiana's health programs. Participants in the Louisiana BRFSS are asked about a wide variety of behaviors such as seat belt use, exercise, tobacco and alcohol consumption, health services utilization, and basic demographic information. Participation in the BRFSS is completely anonymous and voluntary. Prior to analysis, BRFSS data are weighted so that the findings can be generalized to the Louisiana adult population.

BRFSS strengths includes the fact that data is standardized and been collected over a period of time which allows for trend analysis. The data is also diverse allowing for analysis of associations between asthma and other risk behaviors and demographic characteristics. The limitations includes that the survey is only conducted among those who are 28 or older who reside in households with telephones. Data is also self reported which may result in recall bias.

Louisiana Youth Risk Behavior (YRBS) and Louisiana Youth Tobacco Survey (YTS)

The YRBS is a state based survey that monitors priority health-risk behaviors and the prevalence of obesity and asthma among youth and young adults. The YTS is a state-based survey that collects uniform, state-specific data prevalence rates of many different tobacco products, knowledge and attitudes regarding tobacco use, the impact of media and advertising, minors' access to tobacco products, knowledge of tobacco in school curricula, cessation attempts and successes, and exposure to environmental tobacco smoke. The two surveys also include questions about asthma diagnosis, treatment, and activity limitations due to asthma.
The surveys are conducted in both middle and high schools. School and student participation in the survey project is completely voluntary and student responses to the questionnaire are completely confidential. Active consent is obtained from parents of participating students. Students who do not have parental consent do not participate in the survey.

Louisiana Hospital Inpatient Discharge Database (LAHIDD)

The LAHIDD contains consolidated information on complete billing, medical codes, and characteristics describing a patient, services received, and charges billed for each patient encounter.
The LAHIDD contains consolidated information for complete billing, medical codes, and characteristics describing a patient, services received, and charges billed for each inpatient hospital stay. The data are

converted into a standardized format and validated using automated editing and report verification. Each record is subjected to a series of edits to check for accuracy, consistency, completeness, and conformity with the definitions specified in the Data Submittal Manual.

Since the data source is billing forms, all visits or encounters have a diagnosis code. There is some difference of opinion regarding whether some providers emphasize diagnosis codes that yield higher reimbursements. The hospital data are considered "Administrative Data" because they were created for use in billing and remittance of payment. As such, they were not constructed for public health surveillance purposes, and are weak in areas such as external causes of injury and race or ethnicity. In general, however, they are extremely valuable and reasonably complete and valid although not all hospitals report their admissions to LAHIDD. In this analysis an asthma hospitalization was defined as having a principal diagnosis with an International Classification of Disease 9th Revision, Clinical Modification (ICD-9-CM) code of 493.

Louisiana Vital Statistics (Death Certificate Database)

Louisiana requires that death certificates be filed by funeral directors. Funeral directors obtain demographic information from an informant, usually a close family member of the deceased. The cause of death is certified by the decedent's physician or the physician who attended the death. Classification is done using codes and rules outlined in the International Classification of Disease (ICD). Accidental and suspicious deaths are certified by the Medical Examiner. Death Certificate data are assessed for completeness and consistency. The Office of Vital Records and Statistics conducts annual training for funeral directors and local registrars. The database is accurate as all deaths in Louisiana and the United States are reported.

Louisiana Medicaid Data

The Louisiana Medicaid Data is housed within the Department of Health's Office of Health Care Financing and contains records for all Medicaid recipients across the state. Within the data warehouse, records that are maintained include member personal identification and eligibility information, medical and pharmacy claims, reimbursement amounts, provider type, and all other information that is associated with health-related claims. Records are maintained within tables that can be linked to determine health care utilization for individual members or subpopulations within the Medicaid population. Data are processed and updated on a daily basis and reflect continuous fluctuations that occur among member eligibility and health care utilization.

The limitation of this data source is that it does not represent the whole population but only those with Medicaid health insurance coverage type.

Case definition of asthma definition in Medicaid is shown below:

Disease	ICD Diagnosis Code	Description
Asthma	493	ASTHMA
COPD	491.2	OBSTRUCT CHR BRONCHITIS
	493.2	CHRONIC OBSTRUCT.ASTHMA W/OBST PUL DISEA
	496	CHR AIRWAY OBSTRUCT NEC
	506.4	FUM/VAPOR CHR RESP COND
Emphysema	492	EMPHYSEMA
	506.4	FUM/VAPOR CHR RESP COND
	518.1	INTERSTITIAL EMPHYSEMA
	518.2	COMPENSATORY EMPHYSEMA

Reference

1. Measures of asthma assessment and monitoring. In: National Asthma Education and Prevention Program (NAEPP). Expert panel report 3: guidelines for the diagnosis and management of asthma. Bethesda (MD): National Heart, Lung, and Blood Institute; 2007 Aug. p. 36-92.

2. The Public Health Surveillance of Asthma, Leslie P. Boss, Richard A. Kreutzer, Danie; Luttinger, Jessica Leighton, Kenneth Wilcox, Stephen C. Redd. Journal of Asthma 2001 38:1, 83-89

3. 2009 Louisiana State Plan to Address the Burden of Asthma. Louisiana Department of Health and Hospitals, Bureau of Primary Health Care and Rural Health, Louisiana Asthma Management and Prevention Program Available online: http://www.dhh.louisiana.gov/offices/reports.asp?ID=287&Detail=646

4. U.S. Department of Health and Human Services. *Healthy People 2010*. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, DC: U.S. Government Printing Office, November 2000.

5. United States Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Bridged-Race Population Estimates, United States July 1st resident population by state, county, age, sex, bridged-race, and Hispanic origin, compiled from 1990-1999 bridged-race intercensal population estimates and 2000-2008 (Vintage 2008) bridged-race postcensal population estimates, on CDC WONDER On-line Database.

6. Asthma Statistics. American Academy of Allergy, Asthma & Immunology.
Available at: http://www.aaaai.org/media/resources/media_kit/asthma_statistics.stm

Bobby Jindal
GOVERNOR

Alan Levine
SECRETARY

State of Louisiana

Department of Health and Hospitals
Bureau of Primary Care and Rural Health

December 1, 2008

Dear Asthma Stakeholders,

Asthma is a serious chronic disease that impacts our lives frequently in Louisiana. Asthma has even been known to cause an enormous impact in many Louisiana families due to the health effects and loss of life associated with asthma.

Asthma symptoms, which include coughing, wheezing, and chest tightness, are common during an asthma attack. Asthma in children is on the rise and is the leading cause of missed days of school nationally, as well as, in the state of Louisiana. Louisiana is working to decrease the burden of asthma with proper treatment of symptoms and education emphasizing self-management.

The Louisiana Department of Health and Hospitals Bureau of Primary Care and Rural Health is pleased to release the 2007 Louisiana Burden of Asthma Report that provides Louisianans citizens, asthma stakeholders, and Legislators with information regarding asthma prevalence, mortality, the burden of asthma on the patients and caregivers, severity of the disease, and the State cost associated with treating asthmatics.

The Louisiana Asthma Management and Prevention Program and the Louisiana Asthma Surveillance Collaborative will continue to work together to implement evidence based strategies to reduce the burden and improve the quality of life of Louisianans living with asthma.

Sincerely,

Matthew T. Valliere

Matthew T. Valliere, MPA
Director Chronic Disease Prevention and Control Unit

Sincerely,

Mark Anthony Perry

Mark Anthony Perry, MPA
Acting Asthma Program Manager

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2008 Louisiana Asthma Surveillance Report

ASTHMA Management and Prevention Program

LOUISIANA Department of HEALTH and HOSPITALS

Bobby Jindal
GOVERNOR

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Louisiana Department of Health and Hospitals

The Burden of Asthma in Louisiana

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Louisiana Asthma Surveillance Report 2008
March 2010